(ii) a candidate agent, wherein said candidate agent is provided in a test concentration and a control concentration, and

(iii) a testing assay;

(b) contacting said biologically active TL-γ with said test concentration of said candidate agent in said testing assay to produce a test mixture;

(c) contacting said biologically active TL-γ with said control concentration of said candidate agent in said testing assay to produce a control mixture;

(d) assaying the level of TL-γ activity in said test mixture;

(e) assaying the level of TL-γ activity in said control mixture;

(f) comparing the TL-γ activity of said test mixture and said control mixture, wherein differences in the TL-γ activity in said test mixture and said control mixture indicate that said candidate agent is a modulator of TL-γ.

60. The method of Claim 59, wherein said testing assay is selected from the group consisting of plus-end directed microtubule motor activity assays, binding activity assays, and ATPase activity assays.

61. The method of Claim 59, wherein said biologically active TL-γ specifically binds to polyclonal antibodies directed against TL-γ.

62. The method of Claim 59, wherein said biologically active TL-γ is isolated from a cell sample.

63. The method of Claim 59, wherein said biologically active TL-γ is recombinant.

64. The method of Claim 59, wherein said biologically active TL-γ has identity to a TL-γ derived from *Thermomyces lanuginosus*.

65. The method of Claim 59, wherein said candidate agent is selected from the group consisting of antibodies, proteins, oligonucleotides, peptides, saccharides, fatty acids, steroids, purines, and pyrimidines.

66. The method of Claim 59, wherein said testing assay is conducted in a high-throughput screen.

67. The method of Claim 59, wherein said biologically active TL-γ comprises a motor domain having identity to the motor domain of *Thermomyces lanuginosus* TL-γ.

68. The method of Claim 59, wherein said biologically active TL-γ comprises an amino acid sequence of a TL-γ motor domain of SEQ ID NO:1.

69. A method for screening for modulators of TL-γ, comprising in operable order, the steps of:

(a) providing:

(i) biologically active TL-γ, wherein the biological activity of said TL-γ is selected from the group consisting of plus end-directed microtubule motor activity, binding activity, and ATPase activity, and wherein said biologically active TL-γ comprises a tail domain and wherein said tail domain shares at least sixty percent sequence identity with the sequence set forth in SEQ ID NO:1,

(ii) a candidate agent, wherein said candidate agent is provided in a test concentration and a control concentration, and

(iii) a testing assay;

(b) contacting said biologically active TL-γ with said test concentration of said candidate agent in said testing assay to produce a test mixture;

(c) contacting said biologically active TL-γ with said control concentration of said candidate agent in said testing assay to produce a control mixture;

(d) assaying the level of TL-γ activity in said test mixture;

(e) assaying the level of TL-γ activity in said control mixture;

(f) comparing the TL-γ activity of said test mixture and said control mixture, wherein differences in the TL-γ activity in said test mixture and said control mixture indicate that said candidate agent is a modulator of TL-γ.

70. The method of Claim 69, wherein said testing assay is selected from the group consisting of plus-end directed microtubule motor activity assays, binding activity assays, and ATPase activity assays.

71. The method of Claim 69, wherein said biologically active TL-γ specifically binds to polyclonal antibodies directed against TL-γ.

72. The method of Claim 69, wherein said biologically active TL-γ is isolated from a cell sample.

73. The method of Claim 69, wherein said biologically active TL-γ is recombinant.

74. The method of Claim 69, wherein said biologically active TL-γ has identity to a TL-γ derived from *Thermomyces lanuginosus*.

75. The method of Claim 69, wherein said candidate agent is selected from the group consisting of antibodies, proteins, oligonucleotides, peptides, saccharides, fatty acids, steroids, purines, and pyrimidines.

76. The method of Claim 69, wherein said testing assay is conducted in a high-throughput screen.

77. The method of Claim 69, wherein said biologically active TL-γ comprises a motor domain having identity to the motor domain of *Thermomyces lanuginosus* TL-γ.

78. The method of Claim 69, wherein said biologically active TL-γ comprises an amino acid sequence of a TL-γ motor domain of SEQ ID NO:1.

79. A method for screening for modulators of TL-γ, comprising in operable order, the steps of:

(a) providing:

(i) biologically active TL-γ, wherein the biological activity of said TL-γ is selected from the group consisting of plus end-directed microtubule motor activity, binding activity, and ATPase activity, and wherein said biologically active TL-γ comprises a tail domain and wherein said tail domain shares at least sixty percent sequence identity with the sequence comprising amino acids 602 through 784 of SEQ ID NO:1,

(ii) a candidate agent, wherein said candidate agent is provided in a test concentration and a control concentration, and

(iii) a testing assay;

(b) contacting said biologically active TL-γ with said test concentration of said candidate agent in said testing assay to produce a test mixture;

(c) contacting said biologically active TL-γ with said control concentration of said candidate agent in said testing assay to produce a control mixture;

(d) assaying the level of TL-γ activity in said test mixture;

(e) assaying the level of TL-γ activity in said control mixture;

(f) comparing the TL-γ activity of said test mixture and said control mixture, wherein differences in the TL-γ activity in said test mixture and said control mixture indicate that said candidate agent is a modulator of TL-γ.

80. The method of Claim 79, wherein said testing assay is selected from the group consisting of plus-end directed microtubule motor activity assays, binding activity assays, and ATPase activity assays.

81. The method of Claim 79, wherein said biologically active TL-γ specifically binds to polyclonal antibodies directed against TL-γ.

82. The method of Claim 79, wherein said biologically active TL-γ is isolated from a cell sample.

83. The method of Claim 79, wherein said biologically active TL-γ is recombinant.

84. The method of Claim 79, wherein said biologically active TL-γ has identity to a TL-γ derived from *Thermomyces lanuginosus*.

85. The method of Claim 79, wherein said candidate agent is selected from the group consisting of antibodies, proteins, oligonucleotides, peptides, saccharides, fatty acids, steroids, purines, and pyrimidines.

86. The method of Claim 79, wherein said testing assay is conducted in a high-throughput screen.

87. The method of Claim 79, wherein said biologically active TL-γ comprises a motor domain having identity to the motor domain of *Thermomyces lanuginosus* TL-γ.

88. A method for screening for modulators of TL-γ, comprising in operable order, the steps of:

(a) providing:

(i) biologically active TL-γ, wherein the biological activity of said TL-γ is selected from the group consisting of plus end-directed microtubule motor activity, binding activity, and ATPase activity, and wherein said biologically active TL-γ comprises a motor domain sequence, wherein said motor domain sequence shares at least sixty percent sequence identity with the sequence comprising amino acids 1 through 357 of SEQ ID NO:1,

(ii) a candidate agent, wherein said candidate agent is provided in a test concentration and a control concentration, and

(iii) a testing assay;

(b) contacting said biologically active TL-γ with said test concentration of said candidate agent in said testing assay to produce a test mixture;

(c) contacting said biologically active TL-γ with said control concentration of said candidate agent in said testing assay to produce a control mixture;

(d) assaying the level of TL-γ activity in said test mixture;

(e) assaying the level of TL-γ activity in said control mixture;

(f) comparing the TL-γ activity of said test mixture and said control mixture, wherein differences in the TL-γ activity in said test mixture and said control mixture indicate that said candidate agent is a modulator of TL-γ.

89. The method of Claim 88, wherein said testing assay is selected from the group consisting of plus-end directed microtubule motor activity assays, binding activity assays, and ATPase activity assays.

90. The method of Claim 88, wherein said biologically active TL-γ specifically binds to polyclonal antibodies directed against TL-γ.

91. The method of Claim 88, wherein said biologically active TL-γ is isolated from a cell sample.

92. The method of Claim 88, wherein said biologically active TL-γ is recombinant.

93. The method of Claim 88, wherein said biologically active TL-γ has identity to a TL-γ derived from *Thermomyces lanuginosus*.

94. The method of Claim 88, wherein said candidate agent is selected from the group consisting of antibodies, proteins, oligonucleotides, peptides, saccharides, fatty acids, steroids, purines, and pyrimidines.

95. The method of Claim 88, wherein said testing assay is conducted in a high-throughput screen.

96. The method of Claim 88, wherein said biologically active TL-γ comprises a motor domain having identity to the motor domain of *Thermomyces lanuginosus* TL-γ.